

ABSTRACT OF THE DISCLOSURE

An apparatus includes an integrated circuit (IC) die that has a front surface on which an integrated circuit is formed. The IC die also has a rear surface that is opposite to the front surface. The apparatus also includes a microchannel member to define at
5 least one microchannel at the rear surface of the IC die. The microchannel is to allow a coolant to flow through the microchannel. The apparatus further includes at least one thin film thermoelectric cooling (TFTEC) device in the at least one microchannel.